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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,141	03/29/2006	**Gerardus P. Karman**	GB030174US1	7747

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EXAMINER	
SPAR, ILANA L	

ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/574,141	KARMAN ET AL.	
	Examiner	Art Unit	
	ILANA SPAR	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 December 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 20-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18 and 20-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The following Office Action is responsive to the amendments and remarks received on November 16, 2010.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to

be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-18 and 20-28 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-18 and 20-27 of copending Application No. 10/574,142. Although the conflicting claims are not identical, they are not patentably distinct from each other because both inventions are directed to modification of an optical characteristic by controlling the color/grey scale level of the data. Claim 1 of the current invention teaches a display panel and driver of a three dimensional image display device, and a color compensation device that compensates for the viewing angle. Claim 1 of the copending application teaches the same display panel and driver of a three dimensional image display device, and a grey scale compensation device that compensates for the viewing angle. The color level and grey scale of the data are equivalent concepts, such that the current and copending applications are not patentably distinct.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-14, 18, 20-24 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Balogh (US Patent Publication No. 2001/0028356) in view of Andrade et al. (US Patent No. 6,954,193).

With reference to claim 1, Balogh teaches a display device for displaying a three dimensional image such that different views are displayed according to different viewing angles, the display device including:

a display panel having a plurality of separately addressable pixels for displaying said image, the pixels being grouped into a plurality of groups with each group including a plurality of pixels, each pixel in the group corresponding to one of a plurality of different view of the image as a function of an angle with respect to a first axis (see paragraph 32, lines 3-4 and paragraph 39, lines 1-7); and

a display driver for controlling an optical characteristic of each pixel to generate an image according to received image data (see paragraph 47).

Balogh fails to teach a colour compensation device for further controlling said light transmission characteristics of a plurality of pixels within a group to compensate for a predetermined viewing angle dependency of said optical characteristic in a second axis of the display panel, wherein the second axis is transverse to the first axis, wherein a correction applied to each of the plurality of pixels within the group is different.

Andrade et al. teaches a colour compensation device (450) for further controlling said light transmission characteristics of a plurality of pixels within a group to compensate for a predetermined viewing angle dependency of said optical characteristic in a second axis of the display panel, wherein the second axis is transverse to the first axis, wherein a correction applied to each of the plurality of pixels within the group is different (see column 7, lines 22-29 and column 8, lines 63-66).

It would have been obvious to one of ordinary skill in the art at the time of invention that the color varies according to the relationship of the viewer to the individual pixel being viewed, with each pixel providing a different view of the image, as taught by Andrade et al. (see column 2, line 62 to column 3, line 3), such that it would be necessary to compensate pixel intensities at every viewing angle to ensure that viewers are able to view all pixels correctly, regardless of their location on the panel.

With reference to claim 2, Balogh and Andrade et al. teach all that is required with reference to claim 1, and Balogh further teaches a back panel for providing a plurality of discrete sources of illumination, each group of pixels in the display panel being positioned to receive light from a respective one of the discrete sources of illumination (see paragraph 34, lines 1-3).

With reference to claim 3, Balogh and Andrade et al. teach all that is required with reference to claim 2, and Balogh further teaches that the back panel provides a plurality of line sources of illumination (see paragraph 34, lines 6-7).

With reference to claim 4, Balogh and Andrade et al. teach all that is required with reference to claim 2, and Balogh further teaches that the back panel provides a plurality of point sources of illumination (see paragraph 34, lines 1-3).

With reference to claim 5, Balogh and Andrade et al. teach all that is required with reference to claim 2, and Balogh further teaches that the display panel is a light-transmissive display panel adapted for viewing from a side opposite to a side on which the back panel is located (see paragraph 7, lines 1-5).

With reference to claim 6, Balogh and Andrade et al. teach all that is required with reference to claim 1, and Balogh further teaches a lenticular array (20) positioned adjacent to the display panel, each lenticle within the lenticular array focusing light from selected pixels in the display panel (see paragraph 36, lines 1-5).

With reference to claim 7, Balogh and Andrade et al. teach all that is required with reference to claim 6, and Balogh further teaches that each lenticle within the lenticular array is associated with a group of pixels (see paragraph 37 and Figure 2b).

With reference to claim 8, Balogh and Andrade et al. teach all that is required with reference to claim 1, and Andrade et al. further teaches that the display driver and colour compensation device in combination are adapted to control the amount of light passing through each pixel according to a three dimensional colour image to be displayed (see column 7, lines 14-38 and Figure 4).

With reference to claim 9, Balogh and Andrade et al. teach all that is required with reference to claim 1, and Andrade et al. further teaches that the colour compensation device comprises a look-up table containing correction values to be applied in respect of each pixel within a group (see column 7, lines 29-41).

With reference to claim 10, Balogh and Andrade et al. teach all that is required with reference to claim 9, and Andrade et al. further teaches that the correction values are selected according to a viewing angle of a respective pixel within a group (see column 8, lines 63-66).

With reference to claim 11, Balogh and Andrade et al. teach all that is required with reference to claim 10, and Andrade et al. further teaches that the correction values are selected so as to substantially normalise an intensity of colour and/or its colour point in the colour triangle as displayed by a group of pixels to be independent of viewing angle (see column 8, lines 63-66).

With reference to claim 12, Balogh and Andrade et al. teach all that is required with reference to claim 9, and Andrade et al. further teaches that the look-up table includes substitution values or offset values as a function of viewing angle to be applied to a frame store (see column 7, lines 14-41).

With reference to claim 13, Balogh and Andrade et al. teach all that is required with reference to claim 1, and Andrade et al. further teaches that the colour compensation device is adapted to adjust a pixel drive voltage received from the display driver (see column 7, lines 35-38).

With reference to claim 14, Balogh and Andrade et al. teach all that is required with reference to claim 1, and Balogh further teaches that the display panel includes colour clusters for each physical location within the image, a cluster comprising a plurality of said pixel groups each corresponding to a different primary colour, the colour compensation device adapted to control the optical characteristic of each pixel within a group and each group within a cluster so as to produce an image colour for each cluster that is independent of viewing direction (see paragraphs 34-35 and Figure 2c).

With reference to claim 18, Balogh teaches a method for displaying a three dimensional image on a display device such that different views of the image are displayed according to different viewing angles, the method comprising the steps of:

processing image data to form pixel data values for each one of a plurality of separately addressable pixels in display panel, the pixels being grouped into a plurality of groups with each group including a plurality of pixels, each pixel in the group corresponding to one of a plurality of different views of the image as a function of an angle with respect to a first axis, the pixel data values each for controlling light transmission characteristics of a respective pixel to generate an image (see paragraph 39, lines 1-7 and paragraph 47).

Balogh fails to teach color correction of pixel values.

Andrade et al. teaches applying colour correction values to a plurality of pixel data values within each group to compensate for a predetermined viewing angle dependency of an optical characteristic in a second axis of the display panel, wherein the second axis is transverse to the first axis, by controlling an amount of light passing

through each pixel according to a three dimensional color image to be displayed, wherein the colour correction values applied to each of the plurality of pixels within the group are different (see column 7, lines 14-41 and column 8, lines 63-66); and

using said corrected pixel data values to drive pixels of a display panel to generate said image (see column 7, lines 14-29).

It would have been obvious to one of ordinary skill in the art at the time of invention that the color varies according to the relationship of the viewer to the individual pixel being viewed, with each pixel providing a different view of the image, as taught by Andrade et al. (see column 2, line 62 to column 3, line 3), such that it would be necessary to compensate pixel intensities at every viewing angle to ensure that viewers are able to view all pixels correctly, regardless of their location on the panel.

With reference to claim 20, Balogh and Andrade et al. teach all that is required with reference to claim 18, and Andrade et al. further teaches that the colour correction values are obtained from a look-up table containing correction values to be applied in respect of each pixel within a group (see column 7, lines 29-41).

With reference to claim 21, Balogh and Andrade et al. teach all that is required with reference to claim 20, and Andrade et al. further teaches that the correction values are selected according to a viewing angle of a respective pixel within a group (see column 8, lines 63-66).

With reference to claim 22, Balogh and Andrade et al. teach all that is required with reference to claim 21, and Andrade et al. further teaches that the correction values are selected so as to substantially normalise a colour and/or its colour point in the

colour triangle as displayed by a group of pixels to be independent of the viewing angle (see column 8, lines 63-66).

With reference to claim 23, Balogh and Andrade et al. teach all that is required with reference to claim 18, and Balogh further teaches that the colour correction values are derived from a transmission versus voltage characteristic of the display panel, the corrected pixel data values being used to adjust a pixel drive voltage applied to the display panel (see paragraph 7).

With reference to claim 24, Balogh and Andrade et al. teach all that is required with reference to claim 18, and Balogh further teaches that the pixels are configured in colour clusters for each physical location within the image, a colour cluster comprising a plurality of pixel groups each corresponding to a different primary colour, the colour correction values being adapted to control an optical characteristic of each pixel within a pixel group and each group within a cluster so as to produce an image colour for each colour cluster that is independent of viewing direction (see paragraphs 34-35 and Figure 2c).

With reference to claim 28, Balogh and Andrade et al. teach all that is required with reference to claim 18, and it is further inherent that a display as taught by Balogh (see claim 1) would be controlled by a computer, such that the method of claim 18 would be carried out according to instructions provided from a computer program stored on a storage medium in the computer.

7. Claims 15-17 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Balogh in view of Andrade et al. as applied to claims 1 and 18 above, and further in view of Mochizuki (US Patent No. 6,386,720).

With reference to claim 15, Balogh and Andrade et al. teach all that is required with reference to claim 1, but fail to teach that the viewing angle dependence is reduced relative to the first axis which is a y-axis.

Mochizuki teaches that the inherent optical characteristics of the display panel are configured such that viewing angle dependence is reduced or substantially minimized relative to the first axis which is a y-axis (see column 5, line 66 to column 6, line 11).

It would have been obvious to one of ordinary skill in the art at the time of invention that pixels located directly above a light source would not be affected by viewing angle dependence, but that pixels on either side of the y-axis would be, and that any pixel can be compensated for using the above process as necessary to reduce intensity discrepancies.

With reference to claim 16, Balogh, Andrade et al., and Mochizuki teach all that is required with reference to claim 15, and Mochizuki further teaches that the colour compensation device serves to reduce or substantially minimize viewing angle dependence relative to the second axis which is an x-axis, wherein the second axis is orthogonal to the y-axis (i.e. the x-axis) (see column 5, line 66 to column 6, line 11).

With reference to claim 17, Balogh, Andrade et al., and Mochizuki teach all that is required with reference to claim 16, and Mochizuki further teaches that the x-axis is

defined as the horizontal axis when the object is in normal use, and the y-axis is defined as the vertical axis when the object is in normal use (see column 5, line 66 to column 6, line 11).

With reference to claim 25, Balogh and Andrade et al. teach all that is required with reference to claim 18, but fail to teach that the viewing angle dependence is reduced relative to the first axis which is a y-axis.

Mochizuki teaches that viewing angle dependence is reduced or substantially minimized relative to the first axis which is a y-axis (see column 5, line 66 to column 6, line 11).

It would have been obvious to one of ordinary skill in the art at the time of invention that pixels located directly above a light source would not be affected by viewing angle dependence, but that pixels on either side of the y-axis would be, and that any pixel can be compensated for using the above process as necessary to reduce intensity discrepancies, or, if desired, the display can be modified to include additional light sources behind each pixel, thus reducing the viewing angle dependence of the pixels based on the inherent optical characteristics of the display.

With reference to claim 26, Balogh, Andrade et al., and Mochizuki teach all that is required with reference to claim 25, and Mochizuki further teaches that the colour correction values are applied to reduce or substantially minimize viewing angle dependence relative to the second axis which is an x-axis, wherein the second axis is orthogonal to the y-axis (i.e. the x-axis) (see column 5, line 66 to column 6, line 11).

With reference to claim 27, Balogh, Andrade et al., and Mochizuki teach all that is required with reference to claim 26, and Mochizuki further teaches that the x-axis is the horizontal axis when the display panel is in normal use, and the y-axis is the vertical axis when the display panel is in normal use (see column 5, line 66 to column 6, line 11).

Response to Arguments

8. Applicant's arguments filed November 16, 2010 have been fully considered but they are not persuasive. Applicant has argued that Andrade fails to teach the claimed limitation, because Andrade teaches correcting a 2-D display for a single viewer location. Examiner contends that Andrade does teach the invention as claimed. Claim 1 teaches that each pixel in the pixel group corresponds to one of a plurality of different views of an image, and that each of the pixels is corrected for a viewing angle dependency. Andrade teaches a standard LCD display, which, as Applicant has explained, sends its information in all direction; however, the information is distorted, particularly at extreme angles, as is known to happen in a standard LCD. Therefore, no matter where a viewer is located relative to the display, the color of one or more regions of the display will appear at least slightly distorted. To correct for at least one viewer position, Andrade adjusts the pixel values, as is taught by the claim, and teaches a plurality of correction curves that can be applied to as many or as few pixels as necessary. Applicant has argued that the correction applied to each pixel is different, thus clarifying that each pixel in a group is directed to an individual viewing angle. However, the language of the claim remains non-specific and open to interpretation,

and Examiner interprets that each of the pixels taught by Andrade provides a different view of the image (because each pixel provides a portion of the image, which corresponds to a different view) and a different correction curve can be applied to each pixel to correct for variations resulting in the angle of view of the image, such that a correction applied to each pixel within the group (understood to be a row of pixels on the display) can be a different correction curve. Examiner suggests further and more specific amendment of the claim language to clarify the invention and specify the difference between a general viewing angle variation and the particular different viewing angles provided by a 3-D display, in order to overcome the current prior art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ILANA SPAR whose telephone number is (571)270-7537. The examiner can normally be reached on Monday-Thursday 8:00-4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571)272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bipin Shalwala/
Supervisory Patent Examiner, Art Unit 2629

ILS